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The Walking Backward Intervention Experienced by Students with Post Traumatic Stress Disorder (PTSD) in Turkiye's Earthquake

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Abstract

The study aimed to investigate the therapeutic potential of walking backwards as a method for treating psychological trauma and post-traumatic stress disorder which may follow it . The research involved twelve students from different schools, focusing on the effects of the backward walking technique on mental imagery, sleep quality, and emotional health. The study used a qualitative methodology, with personal interviews with participants. Initially, participants had fearful mental images of earthquakes and compulsive repetition of these images. However, after using the technique, 50% reported more control over these images, and 91.66% felt that the frightening images had less effect on their mental state. The backward walking technique also improved sleep quality. Participants reported simpler sleep commencement, deep and prolonged sleep, and a significant increase in the quality of their sleep. Additionally, people who had trauma experienced negative emotions such as dread, poor social communication, melancholy, and rage. However, after using the technique, they reported increased satisfaction, interaction with others, happiness, and familiarity with their surroundings. The study is considered an original scientific contribution to the body of knowledge, as it demonstrates that trauma victims greatly benefit from the kinesthetic treatment of walking backward. This research highlights the importance of incorporating the backward walking technique in the treatment of psychological trauma.

Keywords: Walking Backwards, Psychological Trauma, PTSD, Post-Traumatic Stress Disorder

Introduction

On February 6, 2023, a major disaster in Turkey caused extensive damage, affecting over 15 million people in both Syria and Turkey. Medical facilities and psychosocial support organizations are quickly organized to help those affected (Yıldız *et al.,* 2023). Natural

catastrophes are one of the many causes of trauma, and the February 2023 earthquakes in Turkey caused severe psychological repercussions that escalated to the point of trauma. People's reactions to the events are often influenced by how close they were to the event's epicenter. Individuals who were injured during the earthquake, lost loved ones, saw their homes collapse, were buried under rubble, and had their communities and living conditions destroyed may suffer from far more severe emotional effects (Yıldırım, 2021). As earthquakes and floods are common worldwide, additional assistance protocols are needed during the post-traumatic period until recovery. Interventions must offer emotional and mental support to alleviate survivors' sadness and anxiety in the early aftermath of the tragedy (Rezayat, A. A., et al., 2020). Earthquakes are considered "natural disasters" in the context of trauma literature (Aurizki *et al.,* 2019). Professionals and practitioners are particularly concerned with mental health difficulties in the wake of disasters and wars. The frequency of mental health difficulties in the general population is approximately 8%, but depending on the event's intensity and impact on the impacted communities, this number may increase to as much as 40% in the wake of a natural disaster (Carmassi *et al.,* 2021). Emergency mental health solutions are necessary, especially in cases of manic episodes and acute psychotic exacerbations. Establishing mental health teams that can plan emergency assessments, interventions, and appropriate referrals is essential for providing such services successfully (Yıldız *et al.,* 2023).

Studying movement therapy (reverse walking) in trauma management is necessary for theoretical and practical reasons also for decision makers. First, this knowledge can assist researchers in investigating untested trauma treatment implications of this technique. This study follows Cénat *et al.* (2020) and other studies that have recommended additional research on earthquakes' public health effects and PTSD. Second, this knowledge can assist policymakers in creating vital interventions in emergencies and shocks like natural disasters, conflicts, etc. Third, support practitioners to help their patients. More research on post-traumatic symptoms and treatments is necessary because PTSD is one of the most ignored and untreated mental health issues worldwide (Alipour & Ahmadi, 2020).

The Importance of the Study

The urgent need to investigate and create novel strategies for treating psychological trauma brought on by natural disasters—which affect millions of individuals year worldwide—makes this work crucial. The backward walking technique is suggested in this study as a new and useful therapeutic approach to improve trauma survivors' emotional health, sleep quality, and mental imagery. It draws attention to the study's applicability in filling a knowledge gap about the unproven therapeutic potential of this unusual approach, which can help researchers, decision-makers, and mental health professionals create novel, focused interventions to enhance the quality of life for those with PTSD. Additionally, the study provides a useful strategy for treating acute trauma symptoms such intrusive mental images, nightmares, and sleep difficulties, which makes it beneficial from a scientific and practical standpoint both locally and globally.

Literature Review

Causes of Trauma

Psychological trauma is one of the common issues in psychology. Psychological trauma results from a number of reasons, such as wars (Wall & Lowe, 2020), and natural disasters, including

earthquakes (Wall & Lowe, 2020; Wang & Lan, 2020; Başterzi, 2021; Efendi *et al.,* 2020). Other events, such as assault, abuse, grave accidents and terrorist attacks, can also result in psychological trauma in people (Alipour, F., & Ahmadi, S. 2020).

Symptoms of Trauma

Those who experience trauma suffer from detrimental psychological effects. Trauma survivors frequently experience PTSD. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition defines post-traumatic stress disorder (PTSD) as "a condition in which a person must experience a life-threatening traumatic event primarily outside the dimensions of daily human existence that cause fear, helplessness, and horror" (Rezayat *et al.,* 2020). Natural catastrophes like earthquakes typically cause physical and psychological harm to humans. Rezayat *et al.* (2020) assert that the terrible incidence of these catastrophes and PTSD patients has drawn significant attention in recent decades. According to Alipour, F., & Ahmadi, S. 2020, the overall prevalence of PTSD following an earthquake is 20%; rates vary depending on the earthquake, with Bam in Iran reporting 51.9%, Taiwan reporting 10%–34.3%, Armenia reporting 75%, and Wenchuan reporting 21.5%–40.1%. Children and adolescents should receive top priority due to their emotional susceptibility to unfavorable situations and the psychological traumas they experience following natural disasters (Rezayat *et al.,* 2020; Zhou, 2012). Moreover, Wang and Lan (2020) have shown the prevalence of PTSD among teenagers after an earthquake to be as high as 29.6%. There are three categories of post-trauma symptoms: emotional, sleep, and mental.

Mental Symptoms

Natural disasters usually have different consequences for those affected by trauma. This disorder occurs when the memory of the traumatic event takes over an individual's awareness, resulting in a decrease in their ability to find meaning and enjoyment in life (Van der Kolk, 2022), often leading to negative thought patterns (Cénat *et al.,* 2020). Moreover, post-traumatic stress disorder (PTSD) is marked by enduring, intrusive recollections of the traumatic incident, avoidance of trauma-related triggers, and adverse alterations in thought patterns and emotions (Wang *et al.,* 2021).

Sleep Symptoms

According to Wang *et al.* (2021), sleep disturbances, including insomnia, reduced sleep duration, nightmares, restless sleep, and daytime fatigue, are prevalent among children and adolescents in the aftermath of disasters, and one of the symptoms that characterizes post-traumatic stress disorder (PTSD) is hypervigilance.

Emotional Symptoms

Many people undergo incredibly upsetting experiences without exhibiting any lasting effects from their trauma. Even if a person does not fully meet the comprehensive criteria for a diagnosis of PTSD, symptoms such as depression, dissociation, a sense of detachment from oneself, and repetitive compulsive behaviors linked to traumatic experiences may appear (Van der Kolk, 2022). Furthermore, as natural occurrences, earthquakes can expose survivors to trauma, which can result in a variety of detrimental psychological effects, including anxiety, depression, and posttraumatic stress disorder (PTSD) (Wang & Lan, 2020). Post-traumatic stress disorder (PTSD) and mental illnesses, particularly depression, may result from the tragedy (Efendi *et al.,* 2020). Likewise, Cénat *et al.* (2020) found that PTSD, sadness, and

anxiety symptoms were common in all groups of traumatized individuals. Moreover, those who experience such calamities may acquire acute stress disorder (ASD) as a result of their anxiety (Efendi *et al.,* 2020; Witt *et al.,* 2024). Traumatic occurrences can result in life-threatening post-traumatic stress disorder (PTSD), which can produce feelings of panic, helplessness, and fear (Radiyat *et al.,* 2020).

There is mounting evidence that chronic PTSD can lead to adverse consequences, such as substance addiction, loneliness or social isolation, and a higher risk of suicidal thoughts and actions (Wang *et al.,* 2021). Depressive symptoms are primarily associated with individual trauma, which encompasses events such as aggression, neglect, emotional and physical abuse, and the loss of a caregiver. About 1 in 5 people get depressive symptoms as a result of it (Wang & Lu, 2020). Internalizing and externalizing problems are more common in adolescents with PTSD. These issues include difficulties in their academic and professional lives, elevated anxiety and despair, heightened vulnerability to suicidal thoughts or behaviors, weakened physical health, and difficulty in their social and familial relationships (Barrett *et al.,* 2019; Kazlauskas *et al.,* 2024).

Treatment of Trauma

Usually, treatment of psychological trauma involves many methods that may include direct physical intervention, medications, or psychological intervention. Here, we would like to briefly discuss a few physical approaches to trauma treatment that are in close proximity to our intervention approach, such as sensorimotor psychotherapy and MDRI. According to Ogden and Minton (2000, p. 1), sensorimotor psychotherapy is “a method for facilitating the processing of unassimilated sensorimotor reactions to trauma and for resolving the destructive effects of these reactions on cognitive and emotional experience." A traumatic encounter is not processed in the same way as a random incident. Instead, it tends to be stored as a sensory-linked, fragmented memory lacking distinct chronological boundaries (Andrewes and Jenkins 2019; Ogden & Goldstein, 2016).

Eye movement desensitization and reprocessing (EMDR) therapy consists of a structured set of protocols and procedures based on the adaptive information processing (AIP) model (Shapiro and Laliotis, 2011). In 1987, Shapiro, (1989), Shapiro introduced EMDR as EMD (Eye Movement Desensitization), a treatment for PTSD that gradually evolved into EMDR therapy, a holistic treatment approach. Shapiro developed EMDR to be compatible with all major approaches to psychotherapy. According to Hase (2021), EMDR technology is “therapy consists of a structured set of protocols and procedures based on the adaptive information processing (AIP) model".

Theoretical Problem

How can walking backwards in a controlled manner dismantle trauma pictures, affect sleep and emotions? This is especially true given that the innate response to any stimulus that threatens survival is flight, fight, or freeze. Traumatized people store those events in their memories as images that enter their minds while awake or asleep, disrupting their lives, according to studies. Post-traumatic stress disorder. Given that all these responses manifest as typical physical movements, what would happen to the mental components if we applied shock recall with reversed movements? Medical professionals are increasingly using backward walking. Biomechanically, this walking method has advantages over forward

motion (Klemenov, 2021). The findings from the study of Jamshidi *et al.* (2017) indicate that a six-week regimen of reverse walking training leads to enhanced semi-dynamic and dynamic balance among female high school athletes. Walking backwards, a form of sensory motor therapy, may have an impact on the treatment of trauma. Therefore, this study aims to address this gap by investigating the impact of walking backwards on trauma resulting from the February 2023 earthquake in Turkey, focusing on three key areas: sleep, emotions, and mental images.

Research Question

Based on the problem of the study, the main question of the research is to know and discover the effect of walking backwards in the treatment of psychological trauma. This main questionhas branched into three main questions:

- Q1: What is the effect of walking backwards on the stored mental images of the traumatic event(earthquake)?
- Q2: What is the effect of walking backwards on the sleep of someone who has been traumatized(earthquake) after applying the technique?
- Q3: What is the effect of walking backwards on the negative thinking of the traumatized person(earthquake)?

Research Methodology

A qualitative research methodology centered on a case study approach is used in this study. Twelve pupils impacted by the 2023 earthquake in Turkey were interviewed in order to gather data. The participants, who ranged in educational attainment from 7 to 19, offered their perspectives on their experiences with trauma. A systematic procedure was used, which included assessing trauma symptoms, employing particular prompts to recall and analyze the experience, and applying the walking-backward approach to deal with emotional difficulties, sleep disorders, and stored mental images. As they recalled horrific pictures, participants took intentional backward movements. Changes in imagery, sleep patterns, and emotional states were used to track participants' development. In order to assess changes before and after using the approach, data were evaluated by transcribing interviews, coding replies, and grouping findings into themes.

Data Collection

Traumatized 2023 Turkey earthquake victims were interviewed. The study sample included 12 pupils from primary, middle, and secondary stages who were shocked by southern Turkey's earthquakes. The interviews were conducted face-to-face, via phone, and recorded. In preparation for data unloading and analysis.

Procedures and the Application of the Walking-Back Interviews Technique

- The first stage involves examining changes in the participant's life on the three levels of post-traumatic syndrome to diagnose and select the sample: sleep, waking and dreaming images, and emotional changes towards self, family, and community. The research angles and questions show the changes.
- he second stage involves preparing and recalling the trauma utilizing five components: place, time, participants, activity, and geographical coordinates. Where were you during the earthquake? When did the earthquake hit? Who was with you during the earthquake?

What were you doing when the earthquake struck? What was the design and color scheme of the area where the earthquake occurred?

- In the Third Stage, participants recall earthquake pictures and sounds, take slow, short steps starting with three steps, and test their palms for warmth and sweating (Chrousos & Gold, 1992). We evaluate the mental images based on their distance, color, and size. If one of these saved image characteristics changes, the technique worked. However, we must pause it for at least 24 hours to allow the body and mind to process the new changes and to prevent reflexive responses from the rapid removal of life-threatening pressures over an extended period. If there is no change in the palm(heat- sweat), instruct the student to walk backwards, slow down, and reduce the pace to ten steps. If there is no change, this strategy may not work for this person or situation. We accurately recorded the properties of the stored images, asked the student to communicate after at least 24 hours, pay attention to sleep changes, and communicate with family and friends.
- In the fourth stage, which occurs 24 hours later, the traumatized individuals are first asked about sleep as a distinctive feature in their lives. Continued monitoring and recording sleep axis changes; image and emotion axes work similarly. Eliminating flashbacks stabilizes sleep and improves emotions, leading to better communication with others. That's enough to prove the technology's impact on core symptoms of PTSD and main trauma.

Technology Implementation Limits

This technique requires clear signs of trauma, such as photos or films, to be effective. However, its effectiveness diminishes in the presence of others; we conducted the study in private with reduced lighting or over the phone to minimize this effect. The joint researcher should walk backwards parallel to the participant (without facing them), close their eyes, and then proceed backwards. Sudden shock resolution can have health effects, so it is crucial not to be excessive in resolving trauma to avoid physical repercussions.

Data Analysis

The data analysis process involved preparing raw data by transcribing interviews onto a Word program, confirming the content, classifying and tabulating the data according to three research questions, coding the raw data, and collecting similar codes under the theme name. We then used tables to analyze and comment on the data, clarifying the patient's symptoms and condition before and after applying the walking backwards technique. The study also monitored changes in mental images stored in the mind of the traumatized person, sleep state, and emotions associated with the traumatic event.

Research Findings

Demographic Data

Twelve school students in Antakya, Turkey, affected by the earthquakes in February 2023, participated in the study. We divided the participants into three academic stages: primary stage, middle school, and high school, with ages ranging from 7-19. The following table shows the distribution of the study sample according to age and educational stage.

Table 1
Demographic Data for the Research Sample

Name	Code (number of participant)	Age (years)	Educational level
Hanan	1	16	First Secondary
Reemas	2	14	Second Intermediate
Sham	3	7	First Primary
Abdulrahman	4	18	Third Secondary
Abdullah	5	17	Secondary Second
Ali	6	11	Fifth Primary
Omar	7	19	Third Secondary
Kazem	8	19	Third Secondary
Mohamed Azouz	9	14	Third Intermediate
Maram	10	17	Secondary Second
Mayar	11	13	First Intermediate
Yusef	12	8	Second Primary

The Effect of Walking Backwards on Stored Mental Images of the Trauma (Earthquake)
The study found that the most prominent characteristics of images of traumatic events are their frightening nature and the inability of the traumatized person to control them. The rate of compulsive repetition of stored images of earthquakes compared to other symptoms was 60.33%, while the rate of frightening nature of images of a traumatic event was 32.73%. Other symptoms were 6.94%. Following the application of the walking backward technique, additional features emerged in the patient, suggesting an improvement in the mental state of the images. The impact of images on the traumatized individual was minimal, accounting for 71.11% of the total symptoms. The ability of the traumatized person to control the images of the traumatic event was also prominent, with a rate of 26.91%. 1.92% had other symptoms.

Table 2
The Effect of Walking Backwards on the Mental Images Stored in the Traumatized Person (Earthquake)

Before Applying the Technique Walk Backwards			**After Applying the Technique Walk Backwards**		
Theme	**Codes**	**Percentage**	**Theme**	**Codes**	**Percentage**
Compulsive Image Repetition	✓ Recurring Images ✓ Dominating Images ✓ Nightmares ✓ Images in Sleep	%60.33	Control Over the Pictures	✓ Increasing Control Over Images ✓ Moving Away from Images	%26.91
Scary Pictures	✓ Big Pictures ✓ Scary Pictures ✓ Close Pictures ✓ Dark Pictures ✓ Detailed Pictures	%32.73	Weak Pictures	✓ The Disappearance of Images ✓ The Disappearance of Nightmares ✓ The Fading of Images ✓ The Lack of Images ✓ The Weak Images ✓ The Lack of Repetition of Images ✓ The Decrease in Nightmares ✓ The Disappearance of Sounds ✓ Small Images ✓ Black Images	%71.11
Other Factors	-	%6.94	Other Factors	-	%1.92
2 Themes	9 Codes	%100	2Themes	11 Codes	%100

The text will discuss the injured person's case before and after applying the walking backwards technique, specifically focusing on the stored mental images of trauma.

The State of Mental Images of The Traumatized Patient Before Applying the Walking Backwards Technique

Compulsive Image Repetition

One of the major symptoms of PTSD is the compulsive repetition of traumatic images, which refers to the persistent recurrence of these images in the sufferer's mind. All the participants in the personal interviews mentioned the permanent recurrence of the images in the injured person's mind, a symptom they all referred to. The compulsive image recurrence rate, which stands at 60.33% compared to other symptoms in the traumatized, demonstrates the intensity of these images' influence and their formation of the patient's basic features. For instance, participant-1 describes this phenomenon as follows:

> *"As long as my eyes are open, the pictures of what happened to me repeat; the same scene repeats."*

It is also common for recurring images to occur in dreams, often manifesting as nightmares. For instance, participant 6 describes this phenomenon as follows:

> *"Earthquake nightmares appear every time I sleep as if a new earthquake is happening."*

Participant 12 emphasized the frequency of nightmares related to the earthquake by saying:

> *"There are nightmares on a daily basis, and they are very scary."*

Another crucial aspect of image repetition for traumatized individuals is their forced and uncontrollable recurrence of the image scene; they are unable to manage or dismiss these images from their minds.

The images exert control over the injured person's mind. Participant 2 indicates that he is under the control of the images.

> *"The pictures of the earthquake come against my will, and I can't control them."*

Respondent 4 also highlighted this feature, stating that the patient's obsession with images was compulsive.

> *"I can only push it away or get rid of it by running or jogging."*

Scary Pictures

The analysis of the personal interviews with the participants in the practical study reveals another major symptom in trauma patients. This symptom is related to the images stored in the patient's mind. These images are frightening, dark, close, large, and detailed, which intensifies their impact on the patient. The recurrence rate of this symptom among the injured was notably high, at 32.73%, compared to other symptoms. This was pointed out by several interviewees; for example, participant 1 says:

> *"As long as my eyes are open, the images of what happened to me recur; the same scene repeats itself: dark, frightening images; I perceive the scene in all its nuances"*

This was confirmed by other participants who expressed frightening images that came to their minds and caused them confusion and trembling because they were affected by them. For example, participant 8 refers to this by saying:

"Pictures are very large and scary; they sometimes cause tremors and are often close to me."

This was confirmed by some of the participants in the study by saying that they see themselves inside the event or the shock during the earthquake and did not come out of it, and some of them felt that the images stored in their minds about the earthquake were large and frightening. Participant-5 indicated that by saying:

"*The pictures are big, and I don't see myself in them, but I'm inside the event, as if it's happening right now."*

Imagery State of the Traumatized Patient after Applying the Walking Backwards Technique
The state of the mental images stored in the mind of the injured person was monitored after applying this technique, and two changes were observed. There were two main points for all the participants, namely the control of the images, and the weakness of the images, and each of them carries many indications that confirm the improvement of the condition of the traumatized person. In the following, we explain and analyze the content of each of them**.**

Control Over the Pictures
We applied the walking backwards technique after recalling the state of the traumatized images, and observed a tangible shift in the images' state before and after the technique's application, indicating an improvement in controlling the images stored in the patient's mind. The percentage of participants experiencing this symptom was 26.91%, which was higher than the percentage of participants experiencing other symptoms. The participants emphasized this condition. For example, participant 9 refers to this when asked about the images stored in his mind of the shocking earthquake event by saying:

"Honestly, I control it when it comes."
This is confirmed by other participants, such as participant 10, who confirmed this by saying:

"*I can control it very much."*
It's important to note that the technique also revealed another aspect of image control in the participants: the distance of images from the traumatized person's mind. For example, participant 5 refers to this by saying:

"The images of the incident are getting farther and smaller, and I feel that I have left the image and started watching it. I envision myself immersed in the event, as if it were a distant movie"

This was also pointed out by other participants, such as Participant-9, who confirmed it by saying:
"The images initially moved away, then appeared to fade away."

Poor Pictures

The analysis of the in-person interviews with the participants in the practical study revealed another change among them following the application of the walking backwards technique. This change was the emergence of a state of weakness in the images, which manifested itself in a number of ways. These included the presence of small images, the absence of nightmares, the fading of images, the disappearance of images, the lack of repetition of images, and other characteristics listed in Table 2 that collectively show a positive state indicating an improvement in the state of images in the traumatized person's brain. In the in-person interviews, the majority of participants said that their mental images were in a better state. Following the application of the therapy, some of the terrible images of the earthquake in the minds of the injured people diminished or vanished. The responses from the participants suggested this. As an illustration, participant 1 makes reference to this by stating:

"These images have disappeared, and if they reappear, they will be dark."

Applying the technique of walking backwards after seeing frightening, dark, and large images in the mind of the person who was affected by the earthquake or its weakness causes these images to fade and become less visible in the participant's mind. This has a very positive effect on the patient's condition. 9 suggests that, he stated:

"The images initially moved away, then appeared to fade away."

Additionally, the traumatized patient's nightmares, which had been bothering them prior to the technique's use, either diminished or disappeared. These connotations are evident from the participants' responses. Participant-4, for instance, states that:

“Strangely enough, yesterday the nightmares went away entirely.”

Comparing the Traumatized Person's Mental Image Status Before and After Using the Walking Backwards Technique

The analysis of in-person interviews with schoolchildren demonstrates an important effect of using the walking backwards technique, showing a positive shift in the status of mental images before and after using the approach. The table below illustrates how trauma survivors experienced compulsive recurrence of earthquake pictures, which they were unable to control or get rid of. All participants experienced this issue. Another issue that the participants faced, and 100% of them experienced, was seeing the terrifying images of the earthquake in their minds. This issue caused significant distress for the participants. It suggests that it is a typical indication of trauma.

After using the technique, the participants' images changed, and those affected experienced additional symptoms. 50% of participants, for instance, were able to control the images that were dominating their thoughts. And 91.66% of participants said the earthquake photos, which were terrifying, had less of an impact on them. The following table compares the mental images of the distressing experience before and after applying the walking backwards approach.

Table 3
Comparing the State of the Patient's Mental Images Before and after Performing theWalking Backwards Technique

First: The Case of Mental Images						
Number of Participant	Before Applying the Technique			After Applying the Technique		
	Compulsive Image Repetition	Scary Pictures	Other Symptoms	Control Over the Pictures	Weak Pictures	Other Symptoms
1	√	√	√	-	√	√
2	√	√	-	√	√	-
3	√	√	-	-	-	-
4	√	√	-	-	√	-
5	√	√	-	√	√	-
6	√	√	-	√	√	-
7	√	√	-	√	√	-
8	√	√	-	-	√	-
9	√	√	-	√	√	-
10	√	√	√	√	√	-
11	√	√	√	-	√	-
12	√	√	√	-	√	-
Total	**12**	**12**	**4**	**6**	**11**	**1**
Percentage	**100%**	**100%**	**33.33%**	**50%**	**91.66%**	**8.33%**

The Effect of Applying the Walking Backwards Technique on Sleep for Trauma Patients
The results of the analysis of data on those suffering from psychological trauma as a result of their exposure to the shock of the earthquakes that struck southern Turkey in February 2023 indicated that major symptoms appeared in students during the stages of sleep (before, during, and after). During the pre-sleep phase, trauma patients suffered from difficulty sleeping and persistent insomnia, with the rate of this symptom reaching 32.69% compared to other symptoms. During sleep, the patients suffered from short and intermittent sleep, and this symptom reached 46.14% compared to other symptoms. After sleeping, those affected suffered from fatigue, fear, and discomfort, and the rate of this symptom reached 21.17%.

The application of the backward walking technique led to an improvement in the shock patient's condition during the sleep stages. Before going to sleep, the patients reported feeling easy to fall asleep, a symptom that was 21.78% more common than other symptoms. During the sleep period, the patients experienced deep and prolonged sleep, with a rate of 52.68% for this symptom. Ultimately, following sleep, the patients experienced a state of rest, with the percentage of this symptom reaching 25.54%. In this part of the study, some details will be presented about the condition of the injured person before and after applying the

technique of walking backwards during the three stages of sleep before, during, and after, and the accompanying states and feelings. The following table shows the effect of walking backwards on the sleep state of a traumatized person (an earthquake).

Table 4
The effect of Walking Backwards on the Sleep State of The Traumatized Person (Earthquake)

Before Applying the Technique Walk Backwards			**After Applying the Technique Walk Backwards**		
Theme	**Codes**	**Percentage**	**Theme**	**Codes**	**Percentage**
Difficulty Falling Asleep	✓ Insomnia	%32.69	Ease of Falling Asleep	✓ Easy Sleep ✓ Fast Sleep ✓ Earlier Sleep ✓ Drowsiness ✓ Wanting to Sleep ✓ Yawning	%21.78
Intermittentand Short Sleep	✓ Nightmares ✓ Intermittent Sleep ✓ Short Sleep ✓ Light Sleep	%46.14	Depth and Length ofSleep	✓ Uninterrupted Sleep ✓ Prolonged Sleep ✓ Deep Sleep ✓ Improved Sleep ✓ Sufficient Sleep ✓ Better Sleep ✓ Restful Sleep	%52.68
Post-Sleep Disturbances	✓ Waking up Tired ✓ waking up Upset ✓ waking up Scare	%21.17	Feeling Rested When WakingUp	✓ Waking up Excited ✓ waking up Surprised ✓ Tired ✓ waking up Sore ✓ Heavy Movement ✓ silent mind ✓ lethargy ✓ Waking up Relaxed ✓ waking up Surprised ✓ waking up Scared	%25.54
3 Themes	**8 Codes**	**%100**	**3 Themes**	**22 Codes**	**%100**

In the paragraphs that follow, we will describe the injured person's condition prior to, during, and following the application of the walking backwards technique in connection to their sleeping state.

The Traumatized Patient's Sleep Condition Prior To Using the Walking Backwards Technique Having Trouble Falling Asleep

A person with post-traumatic stress disorder frequently experiences sleep problems before bed. Every participant in the current study's personal interviews verified the patient's reported state of sleeplessness, according to the data analysis. Comparing this symptom to the other sleep-related symptoms that the patient has, the percentage was 32.69%. Participant 4 mentions it, for instance, by stating:

"The worst thing that occurs to me during the day is going to sleep. I've been carrying the weight of it since midday. It is quite painful".

Those who have had a traumatic event may also experience a shorter than normal sleep duration as a result of their inability to fall asleep due to insomnia. All the participants exhibited the same presentation style. Participant 2 brought this up by stating:

"Since the earthquake, my sleep has significantly decreased."

Short and Sporadic Sleep

According to the results of the in-person interviews, the individual who experienced the traumatic event also experiences other symptoms during his sleep period, such as lack of rest. Intermittent sleep, short sleep duration, and light sleep, primarily from nightmares, are among the most noticeable symptoms of post-traumatic stress disorder. Compared to other symptoms associated with the patient's sleep state, these characteristics accounted for 46.14% of the total. All study participants reported experiencing this distress. For instance, Participant 1 describes his struggles to get enough sleep every day as follows:

"I wake up often, and sometimes I can't go back to sleep."

Trauma survivors may also experience nightmares during sleep due to the ingrained memories of the seismic incident. For instance, participant 4 responded as follows when asked how many hours he slept:

"The nightmares that come every time I close my eyes make the sleep hours too short."

A shorter sleep duration than the typical and adequate number of hours is another trait of individuals with post-stress syndrome. The majority of participants said they slept for shorter periods of time. As an illustration, participant 5 states:

"I used to wake up frequently and have trouble going back to sleep, especially after three in the morning."

Disturbances After Sleep

Those harmed in the sleep-related traumatic event experience pain that persists throughout the stages of sleep. For instance, the pain before bedtime can manifest as trouble falling asleep and persistent insomnia, while the pain during sleep can manifest as sporadic sleep, shorter sleep durations than usual, and the occurrence of nightmares during the sleep period. Additionally, pain persists after sleep, manifesting as an unfavorable mood that the patient experiences, marked by fatigue, worry, and anxiety. Participant 1 translates this meaning as follows:

"Whenever I wake up from my sleep, it's like I wake up sore and upset."

After waking up, the participants also reported feeling more exhausted and less active. And they used various methods to convey these emotions. Participant-8 illustrates this by stating, for instance:

"When I wake up, my level of activity is lower."

The Traumatized Patient's Sleep Condition Improved After Using The Walking Backwards Technique.

The idea of walking backwards is a natural strategy that relies on reversing the movement in which the mind recorded the painful occurrence in order to alter the state of the images that store the traumatic experience. It influences the patient's sleep patterns in all three stages—before, during, and after the sleep. The research sample for this technique included twelve participants from the three primary, intermediate, and secondary school stages in the state of Antakya. We tracked the injured person's sleep condition after using this procedure, and all participants showed a notable improvement. These alterations included the three stages of sleep, each of which exhibited numerous signs indicated the traumatic person's improved condition. We will describe and examine each of its contents in the subsequent sections.

The Simplicity of Falling Asleep

The walking backwards treatment improved the patients' conditions before they went to sleep. The patient's difficulty falling asleep evolved into a number of symptoms that collectively indicate an improvement in the patient's sleep situation. These symptoms include the ability to fall asleep quickly, easily, and consistently. yawning, drowsiness, and early slumber. Each student experienced these symptoms to varied degrees. Compared to the other symptoms associated with the patient's sleep condition, this accounted for 21.78% of the total symptoms.

Positive symptoms emerged following the application of the walking backwards approach, suggesting that the patient was in a positive mood prior to the onset of sleep. The participants in the practical study expressed this in various ways. For instance, when asked if his sleep condition had changed, participant 7 responded as follows:

"It's easier to fall asleep, and I fell asleep faster."

Other participants also mentioned this, participant 9 stating that he had returned to his typical sleep condition.
"I fell asleep much easier after the session."

The Length and Depth Of Sleep
The findings of data analysis from in-person interviews with trauma survivors of the 2023 Turkish earthquakes show that patients' conditions have improved when they sleep. Sufficient, better, and peaceful sleep. Compared to the patient's other alterations, after the procedure, these sleep-related changes accounted for 52.68%. Among the participants in the in-person interviews, there was a discernible improvement in deep sleep, one of the health indicators of the patient's sleep condition. Participant-7 provided the following description of his improved condition:

"I had the most restful sleep in a long time."

Another sign that the traumatized individual has recovered is if they are sleeping soundly and continuously. The participants brought this to light in various ways. For example, participant 4 provided the following description of his sleep quality:

"I was able to sleep without any disruptions, and my mother even confirmed yesterday that I was still alive."

The patient's sleep improved after his brief, insufficient sleep period, which fell below the average human sleep rate. This marks the third indication that the patient is in a positive state of sleep following the application of the technique, specifically long sleep. When asked about the sleep duration following the procedure, Participant 5 made reference to this and responded as follows:
"I woke up later than usual, having slept for more than 12 hours."

Having a Restful Emotions Upon Awakening
The practical study's findings, which came from in-person interviews with Antakya public school students, show that people who have experienced earthquake shock report feeling happier after waking up from their sleep. relaxed, astonished to wake up. Compared to the symptoms experienced before and during sleep, the patient's emotional state after sleep constituted 25.54% of these symptoms. For instance, after using the approach, participant 10 reported that his emotional state had improved, stating,

"I woke up energized and excited."

After waking up, other individuals likewise described their feelings as being in awe and quiet. Participant 5, for example, expressed his feelings as follows:

"My mind tends to silence; there are no internal dialogues."

Examining the Traumatized Patient's Sleep Conditions Before and After Using the Walking Backward Technique

By comparing the sleep condition of the traumatized individual before and after using the backward walking approach, we can draw important conclusions. The findings of the examination of in-person interviews with schoolchildren show that sleep has improved, demonstrating the substantial influence of the technology's use. The three stages of the patient's sleep state—before, during, and after sleep—were present prior to the technique's application. The most significant symptom of the traumatized person's state prior to sleep was trouble falling asleep, as the majority of participants (100%) experienced this issue. The condition affected 91.66% of afflicted individuals, who experienced short and disrupted sleep during the night. A third issue that trauma patients face is post-sleep disturbances, which manifest as weariness, anxiety, and terror after they sleep. This issue affected 83.33% of the patients.

Following the application of the technique, we noted other sleep-related symptoms, suggesting a noticeable improvement. For instance, 75% of participants reported having no trouble falling asleep. 41.66% of them began to slumber immediately after waking up, and 100% of them slept soundly and for an extended duration. The accompanying table presents a comparison of the three stages of sleep before, during, and after using the backward walking technique.

Table 5

Comparing the Sleep State of The Traumatized Patient Before and afterImplementing the Walking Backwards Technique

Second: The Case of Sleep						
Number of Participant	**Before Applying the Technique**			**After Applying the Technique**		
	Difficulty Falling Asleep	*Intermittent and Short Sleep*	*Post-Sleep Disturbances*	*Ease of Falling Asleep*	*Depth and Length ofSleep*	*Feeling Rested When Waking Up*
1	√	√	√	√	√	-
2	√	√	√	-	√	-
3	√	-	-	√	√	-
4	√	√	√	√	√	-
5	√	√	√	-	√	-
6	√	√	√	-	√	-
7	√	√	√	√	√	√
8	√	√	√	√	√	√
9	√	√	√	√	√	-
10	√	√	√	√	√	√
11	√	√	-	√	√	√
12	√	√	√	√	√	√
Total	**12**	**11**	**10**	**9**	**12**	**5**
Percentage	**100%**	**91.66%**	**83.33%**	**75%**	**100%**	**41.66%**

The Impact of Walking Backward on the Traumatized Person's Negative Emotions (Earthquake)

The data analysis of individuals affected by the February 2023 earthquakes in southern Turkey, specifically in the state of Antakya, reveals a spectrum of emotions that collectively contribute to a state of negative emotions. Anger accounted for 28.87% of these emotions, followed by melancholy (33.38%), fear (15.55%), and inadequate communication with the outside world (19.98%).

Following the application of the backward walking approach, the patients experienced positive sensations, indicating a significant improvement in their condition. The most significant of these emotions were contentment (63.9%), joy (10.86%), enhanced communication (15.2%), and communication restoration (10.86%). 8.68% of them understood their surroundings. As displayed in Table 4 below:

Table 6

The Effect of Walking Backwards on the Bad Feelings of the Traumatized Person(Earthquake)

Before Applying the TechniqueWalk Backwards			**After Applying the TechniqueWalk Backwards**		
Theme	**Codes**	**Percentage**	**Theme**	**Codes**	**Percentage**
Anger	✓ Anger, ✓ Nervousness ✓ Rejection ✓ Violence	%28.87	The Satisfaction	✓ Rest ✓ Silence ✓ Tranquility ✓ Joy ✓ Relaxation ✓ No Worries ✓ Stillness ✓ Love ✓ Improvement ✓ Laughter ✓ Kindness	% 63.09
Depression	✓ Bad Feeling ✓ Losing The Valueof Things ✓ Losing The Valueof Life ✓ Annoyance ✓ Loss ✓ Worries ✓ Hatred of Life ✓ Depression ✓ Sadness ✓ Distress ✓ Crying ✓ Misery ✓ Strange Feeling	%33.38	Cheerfulness	✓ Sensation of height off theGround ✓ Higher Activity	%10.86

	✓ Tension				
Miscommunication	✓ Stubbornness ✓ Poor Communication ✓ Indecisiveness NotThinking Clearly ✓ Isolation	%19.98	Communication Improved	✓ Giving Willingness ✓ Neat Ideas ✓ Communication	%15.2
The Fear	✓ Fear ✓ Horror	%15.55	Reacquaint Yourself with The Environment	✓ Surprise ✓ Astonishment ✓ Changing thePicture of theWorld	%8.68
Other Factors	-	%2.22	Other Factors	-	
4 Themes	**24 Codes**	**%100**	**4 Themes**	**18 Codes**	**%100**

This section of the study will provide information on the injured person's condition (in our case, the February 2023 earthquakes in Turkey), both before and after using the walking backwards technique to track how the traumatized person's feelings, sensations, and perceptions changed.

The Traumatized Person's Emotional Condition Prior To Using the Walking Backwards Technique

Anger

Anger is one of the most common signs of trauma, as it manifests in a variety of symptoms and emotional states, such as anxiety, rejection, and aggression. The current study, which involved general education pupils in the Turkish state of Antakya supported these findings. Participant 1 expressed the anger he felt as a result of the experience.

"Rage grips me until it hurts my stomach."

It's noteworthy to note that the injured person's emotions have been taken over by rage to such a terrible extent that it may lead the sufferer to consider suicide. In reference to this, Participant 4 stated:

"I want to burn this world and everything in it, and then I want to burn myself because I am so angry."

These emotions have deteriorated into a violent state, causing harm to individuals close to them and those suffering from post-distress disorder. The parents of Participant-12, for instance, said this as follows:

"He treats his sister violently. Although he was kind to her prior to the earthquake, he now strikes her frequently for no apparent reason and has become unyielding"

Depression

It's important to note that traumatized individuals frequently experience depression, and the findings of in-person interviews indicated what this disease entails. Anger, loss, anxiety, a dislike of life, depression, sadness, anguish, crying, misery, a peculiar feeling, tension, and frustration are some of the ways that the symptoms of depression manifested for the individuals who experienced it. Regarding the discomfort caused by their trauma, Participant 4 states:

"I feel the misery and absurdity when life has no meaning and no explanation for what is happening in it."

The participants' feelings of hatred as a result of the trauma are one of the emotional states in which depression appears. For instance, participant 1 described this emotional state as follows:

"I once loved studying, but after the earthquake, I detested everything. Everything I once loved lost all of its value".

Personal interviews with individuals who experienced stress from the earthquakes revealed a lack of ambition and a sense of loss. Participant 7 expressed his emotional state in the following way:

"I was unaware of the significant loss involved. Since that experience, I've lost my sense of self."

Miscommunication

The victim's wish to withdraw from society typically links to the traumatic experience. The patient's inability to communicate effectively with others and even with themselves encapsulates all of these emotions. In the present investigation, the findings of analysis of the participants' in-person interviews revealed that there are various types of mis communication including isolation, poor communication, hesitancy, stubbornness, and unclear thinking. For instance, Participant-3's parents attest to the fact that she has separated herself from her environment, stating:

"Despite being unable to sleep alone, she became more obstinate in obtaining what she wanted after being totally cut off from her family."

Other students who mentioned having trouble communicating with the outside world corroborate this. For instance, participant 4 said:

"My communication is lacking with many friends and family members with a long history, and they are also unable to communicate."

Nearly all traumatized patients have feelings of loneliness and communication breakdowns. Participant 5 makes the following observation:

"My communication is very bad; no matter how much I try to hide my feelings, it is big, and it appears on my face."

The Fear

The findings of the in-person interviews with the participants demonstrated that the traumatized individual experiences additional emotions, such as fear, which has become a natural trait of the wounded person. According to Participant 8,

"I am afraid of another disaster."

He also mentioned a participant who claimed that the stress he had endured during the tremors had caused him to experience terror throughout the day.

"I dread all day."

The Traumatized Person's Emotional Condition Following The Use Of The Walking Backward Technique

The walking backwards strategy modifies the casualty's emotional state by using a movement opposite to the one in which the mind recorded the traumatic incident. We tracked the patient's emotional state after using this procedure, and all students showed a notable improvement. These changes included the replacement of anger, sadness, fear, and poor communication with feelings of joy, happiness, improved communication with the outside world, and sentiments of reacquainting himself with the environment, a novel experience for the sufferer. We describe and examine each of its contents in the sections that follow.

The Contentment

These emotions, which manifested in various ways expressed by the study participants, included comfort, silence, calmness, joy, relaxation, lack of worry, stillness, love, improvement, laughter, and kindness. The results of the analysis of personal interviews with students affected by the earthquake in Turkey revealed a significant shift in the emotions of the injured, from anger to satisfaction. In comparison to the other symptoms and emotions that the participants experienced following the technique's application, the degree of satisfaction reached 63.09%. For instance, participant 7 expressed his sentiments of ease and happiness using the following words:

"A great, great relief; the world is a joy."

Additionally, participant 5 acknowledged his emotions of relief from the frustration and rage he had been experiencing prior to using the approach.

"I've been very relaxed since yesterday, but I don't want to do anything."

Joyfulness

The results of the in-person interviews showed that the trauma patients experienced sensations of activity and excitement following the implementation of the walking backwards approach. Regarding this, Participant 2 made the following statement:

"A sense of flight overwhelmed me after the technique and the height of the ground."

participant 12, expressed the following sentiments:
"There's a feeling of lifting off the ground."

Improved Communication
As previously mentioned, miscommunications and feelings of isolation within the patient's external environment can manifest as stubbornness, poor communication, reluctance, improper thinking, and isolation. After walking backwards, positive feelings of giving, organization, and communication emerged. Participants 3 think her outward communication has improved:

"I get along well with my family, still do not sleep alone, and am less stubborn (I,m calmer)"

Other participants attested to the transformation of a love of seclusion and poor communication into positive emotions, participant 7 said:

"Communication has improved. Previously, I avoided talking. Now I speak more easily."

Reacquaint with The Environment
The analysis of the participants' personal interviews showed that the trauma patients' fear and terror turned into astonishment and a transformation of their image of the outside world, as if they were re-evaluating and getting to know it again. Participant-4 described these emotions:
"There was only silence and astonishment, as though the world had transformed."

Comparing Traumatized Person's Emotions Before and After Walking Backwards
Personal interviews with school kids with earthquake shock show that the walking backwards technique significantly improves traumatized people. Shock victims felt ill before walking backwards. For instance, 91.66% were furious, 66.66% depressed, 50% had inadequate social communication, and 41.66% were afraid. The technique improved the psychological state of the traumatized individuals, resulting in 100% feeling satisfied, 33.33% feeling cheerful, 50% improving their ability to communicate with the community, and 16.66% becoming familiar with their surroundings. The following table depicts shock sufferers' emotional states before and after the method.

Table 7
Comparing the Feeling State of the Traumatized Person before and afterImplementing the Walking Backwards Technique

Third: The Case of Feeling								
Number of Participant	**Before Applying the Technique**				**After Applying the Technique**			
	Anger	*Depression*	*Miscommunication*	*Fear*	*Satisfaction*	*Cheerfulness*	*Communication Improved*	*Reacquaint Yourself with The Environment*
1	√	√	-	-	√	-	-	-
2	√	-	-	√	√	√	-	-
3	-	-	√	√	√	-	√	-
4	√	√	√	-	√	-	-	√
5	√	√	√	-	√	-	-	-
6	√	-	-	√	√	-	√	-
7	√	√	√	-	√	-	√	-
8	√	√	-	√	√	-	√	-
9	√	-	-	-	√	√	-	-
10	√	√	-	-	√	-	√	√
11	√	√	√	-	√	√	√	-
12	√	√	√	√	√	√	-	-
Total	**11**	**8**	**6**	**5**	**12**	**4**	**6**	**2**
Percentage	**91.66%**	**66.66%**	**50%**	**41.66%**	**100%**	**33.33%**	**50%**	**16.66%**

Discussion

Personal interviews with schoolchildren examined the usefulness of backward walking in treating trauma-related mental imagery. The analysis shows that the strategy improved mental imagery, indicating a considerable influence. All individuals initially experienced obsessive repetition of images related to the earthquake, as well as fearful mental images of the earthquake. The studies by Çitak and Dadandı (2024); Van der Kolk, (2022); and Kaur, (2022) revealed that the distressing incident dominates the awareness of traumatized individuals. This supports the study of Cénat *et al.* (2020) that found negative thought habits in response to natural disasters. The current study confirms the findings of Wang *et al.* (2021), which found that painful recollections of the trauma predominated. The technique gave 50% of participants power over these visuals, and 91.66% saw a change. The technique may have contributed to a decrease in mental stress from earthquake pictures. The technique has reduced individuals' traumatic symptoms.

According to firsthand interviews with schoolchildren, the backward walking approach improves sleep quality in disturbed people. Before using the approach, individuals experienced difficulties in falling asleep, interrupted or brief sleep, and post-sleep problems

such as anxiety, terror, and exhaustion. These three difficulties affected 100%, 91.66%, and 83.33% of participants, respectively. This study confirms that trauma patients have insomnia, decreased sleep duration, nightmares, and disrupted sleep. Implementing the strategy improved sleep. In particular, 75% of students fell asleep more easily, all had deep and lengthy sleep, and 41.66% felt more rested after waking up. The approach appears to improve sleep quality significantly (Wang *et al.,* 2021; Kaur, 2022).

Based on firsthand conversations with school pupils, the back-walking approach has favorable impacts on seismic shock victims' sentiments. Before utilizing this strategy, traumatized people had anger (91.66%), melancholy (66.66%), poor social communication (50%), and fear (41.66%). The current investigation confirms prior findings (Van der Kolk, 2022; Wang & Lan, 2020; Wang & Lu, 2020; Efendi *et al.,* 2020; Cénat *et al.,* 2020; Barrett *et al.,* 2019). describing his traumatic depression. It also supports the findings of the studies (Van der Kolk, 2022) and (Wang *et al.,* 2021) showing trauma victims are isolated and have poor communication, the study (Radiyat *et al.,* 2020) found that.

Fear plagues trauma victims. Finally, it supports the study's findings by Wang and Lu, (2020) that trauma victims experience anger, violence, and physical abuse. However, this strategy greatly improved their mental wellness. All patients felt satisfied, 33.33% were joyful, 50% enhanced their social interaction, and 16.66% regained familiarity. This method improves trauma victims' mental health, according to these findings.

Theoretical Contributions

The research makes many theoretical advances. First, it tests if backward walking improves traumatized patients' mental imagery, sleep habits, and emotions leading to treat PTSD. This strategy helps understand trauma rehabilitation by transforming compulsive images into regulated ones, improving sleep quality, and turning negative emotions into positive ones. Second, the study shows that the walking backwards strategy can alleviate trauma-related symptoms in other domains. Its impact on mental imagery, sleep, emotions, and communication shows a holistic approach to addressing problems. It enhances trauma recovery strategies and provides a diverse approach that may influence other therapeutic procedures.

Practical Implications

This study helps mental health professionals, psychological counselors, social workers, and all related specializations expand psychological treatment options for disaster and war-traumatized people by facilitating the treatment process and opening new horizons for therapists to improve therapeutic intervention tools.

Limitations and Opportunities

Like all scientific research, this study has limitations. Firstly, we limited the technique's monitoring to 24 hours after application. Future long-term research can assess the walking backwards strategy over time. The current study only included schoolchildren; however, future studies could include seniors, adults, and adolescents. Third, the study only included trauma victims from the 2023 Turkish earthquake. Future research may include conflict-traumatized people from different countries and disasters.

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